

NTE291 (NPN) & NTE292 (PNP) Silicon Complementary Transistors Medium Power Amp, Switch

Description:

The NTE291 (NPN) and NTE292 (PNP) are General-Purpose Medium-Power silicon complementary transistors in a TO220 type package designed for switching and amplifier applications. They are especially designed for series and shunt regulators and as a driver and output stage of high-fidelity amplifiers.

Features:

- Low Saturation Voltage

Absolute Maximum Ratings:

Collector-to-Base Voltage, V_{CBO}	130V
Collector-to-Emitter Voltage ($R_{BB} = 100\Omega$, $V_{BB} = 0$), V_{CEX}	130V
Collector-to-Emitter Voltage, V_{CEO}	120V
Emitter-To-Base Voltage, V_{EBO}	5V
Continuous Collector Current ($T_C \leq +106^\circ\text{C}$), I_C	4A
Continuous Base Current ($T_C \leq +130^\circ\text{C}$), I_B	2A
Power Dissipation, P_D	
$T_C = +100^\circ\text{C}$	16W
Derate Linearly Above $T_C = +100^\circ\text{C}$	0.32W/ $^\circ\text{C}$
$T_C = +25^\circ\text{C}$	40W
Derate Linearly Above $T_C = +25^\circ\text{C}$	0.32W/ $^\circ\text{C}$
$T_A = +25^\circ\text{C}$	1.8W
Derate Linearly Above $T_A = +25^\circ\text{C}$	0.0144W/ $^\circ\text{C}$
Operating Temperature Range, T_{opr}	-65° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$
Lead Temperature (During Soldering), T_L	
At distance $\geq 1/8$ in. (3.17mm) from case for 10s Max	$+235^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	3.125 $^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	70 $^\circ\text{C/W}$

Note 1. NTE292MCP is a matched complementary pair containing 1 each of NTE291 (NPN) and NTE292 (PNP).

Electrical Characteristics: ($T_C = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CEO}	$V_{CE} = 60\text{V}, I_B = 0$	—	—	1	mA
Collector Cutoff Current	I_{CER}	$R_{BE} = 100\Omega, V_{CE} = 120\text{V}$	—	—	0.1	mA
		$R_{BE} = 100\Omega, V_{CE} = 120\text{V}, T_C = +100^\circ\text{C}$	—	—	2	mA
Collector Cutoff Current	I_{CEX}	$V_{CE} = 120\text{V}, V_{BE} = -1.5\text{V}$	—	—	0.1	mA
		$V_{CE} = 120\text{V}, V_{BE} = -1.5\text{V}, T_C = +100^\circ\text{C}$	—	—	2	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = -5\text{V}, I_C = 0$	—	—	1	mA
Collector-to-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 0.1\text{A}, I_B = 0, \text{Note 1}$	120	—	—	V
Collector-to-Emitter Sustaining Voltage	$V_{CER(sus)}$	$R_{BE} = 100\Omega, I_C = 0.1\text{A}, \text{Note 2}$	130	—	—	V
DC Forward Current	h_{FE}	$V_{CE} = 4\text{V}, I_C = 1.5\text{A}, \text{Note 1}$	15	—	150	
		$V_{CE} = 2.5\text{V}, I_C = 4\text{A}, \text{Note 1}$	2	—	—	
Base-to-Emitter Voltage	V_{BE}	$V_{CE} = 4\text{V}, I_C = 1.5\text{A}, \text{Note 1}$	—	—	2	V
		$V_{CE} = 2.5\text{V}, I_C = 4\text{A}, \text{Note 1}$	—	—	3.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1.5\text{A}, I_B = 0.15\text{A}, \text{Note 1}$	—	—	1.2	V
		$I_C = 4\text{A}, I_B = 2\text{A}, \text{Note 1}$	—	—	2.5	V
Small Signal Forward Current Transfer Ratio	h_{fe}	$V_{CE} = 4\text{V}, I_C = 0.5\text{A}, f = 50\text{kHz}$	20	—	—	
Gain Bandwidth Product	f_T	$V_{CE} = 4\text{V}, I_C = 0.5\text{A}$	4	—	—	MHz
Small Signal Forward Current Transfer Ratio	$ h_{fe} $	$V_{CE} = 4\text{V}, I_C = 0.5\text{A}, f = 50\text{kHz}$	4	—	—	
Collector-to-Base Capacitance	C_{obo}	$V_{CB} = 10\text{V}, I_C = 0, f = 1\text{MHz}$	—	—	250	pF

Note 1. Pulsed: Pulse Duration = $300\mu\text{s}$, Duty Factor = 0.018.

Note 2. **CAUTION:** The sustaining voltage ($V_{CER(sus)}$) **MUST NOT** be measured on a curve tracer.

